

REMARKS

Prior to entry of this amendment, claims 1-20 are pending in the subject application.

Applicants request, in the next Office action, that the Examiner indicate the acceptability of the drawings filed on January 26, 2004.

Claims 1-20 are presented for further consideration on the merits. Claims 1, 7 and 13 are independent.

A. Introduction

In the outstanding Office action, the Examiner rejected claims 1-4, 6-10, 12-16 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Japan Patent Abstract No. 2001-138272 to Jinichi et al. ("the Jinichi et al. reference") in view of "Mechanism and Control of a Leg-Wheel Hybrid Mobile Robot," Proceedings of the 1999 IEE/RSJ, 1999 IEEE to Adachi et al. ("the Adachi et al. reference"); rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over the Jinichi et al. reference in view the Adachi et al. reference and further in view of U.S. Patent Publication No. 2003/0114960 to Takenaka et al. ("the Takenaka et al. reference"); and objected to claims 5, 11 and 17 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The rejections are respectfully traversed for at least the reasons set forth below.

B. Asserted Obviousness Rejection of Claims 1-4, 6-10, 12-16 and 18

In the outstanding Office action, the Examiner rejected claims 1-4, 6-10, 12-16 and 18 under 35 U.S.C. § 103(a) as being unpatentable over the Jinichi et al. reference in view of the Adachi et al. reference. Applicants respectfully traverse this rejection and respectfully submit that the Examiner failed to set forth a *prima facie* case of obviousness for at least the reasons set forth below.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), all of the claim features must be shown in the references. Applicants submit that the Jinichi et al.

and the Adachi et al. references, individually or in combination, fail to disclose or suggest, *inter alia*, “slope-detecting means for sensing a slope of a floor,” as recited in claim 1.

The Examiner admits that the Jinichi et al. reference fails to disclose “detecting the slope of a floor.” However, the Examiner attempts to overcome the admitted deficiencies of the Jinichi et al. reference by arguing that the Adachi et al. reference teaches sensing the slope of the floor.¹ Applicants respectfully disagree.

The Adachi et al. reference is directed to the mechanism and control of a leg-wheel hybrid mobile robot including three locomotion modes (e.g., a wheel mode, a hybrid mode and a step mode). In the wheel mode, four wheels are used on a flat terrain, in the hybrid mode, two legs and two active wheels are used on a rough terrain, and in the step mode, the legs and wheels are used to climb or descend steps.² However, it is submitted that none of the modes in the Adachi et al. reference teaches or suggest “detecting the slope of a floor.”

Further, the Adachi et al. reference teaches in paragraph 4.2 that:

[i]n this mode, front passive wheels are locked, and front two legs are used to walk. This mode is cooperative locomotion of front legs and rear driving wheel. Two merits appear by using front legs to walk. One is traction. When the robot moves by the wheel mode, traction is generated only rear wheels. In the hybrid mode, a front leg drags the robot body during its support phase. Traction is generated at all the contact points between the robot and the ground, and it contributes to the mobility on the slope or soft terrain. The other merit is adaptability for steps. Front passive wheel is relatively small, and its adaptability is limited. (*emphasis added*)

The Adachi et al. reference thus explains that the relative movement between a leg and a surface is based on traction. In other words, the Adachi et al. reference fails to explicitly teach a “slope-detecting means for sensing a slope of a floor,” as recited in claim, but instead, uses traction between the wheel and the surface to compute the terrain. Therefore, the Adachi et al. reference fails to include detecting a slope, as recited in claim 1,

¹ See Office action, mailed July 16, 2007, page 3, first full paragraph.

² See the Adachi et al. reference, Abstract.

as the Adachi et al. reference merely observes and measures relative movement, via traction, between the robot and the terrain

Further, the control loop in the Adachi et al. reference is not used to control lower and upper body parts, as further recited in claim 1, but is used to maintain the wheels in contact with the ground and maintain a constant turning center during a leg motion.³

Even assuming *arguendo* that the references teach all of the features (in which Applicants do not agree or admit to), the Examiner has failed to provide any evidence of motivation why a leg-wheel hybrid mobile robot of the Adachi et al. reference should be used in a robot of the Jinichi et al. reference, or more specifically, evidence as to why one of ordinary skill in the art would be motivated to incorporate the hybrid mode of the Adachi et al. reference (which locks the front passive wheels and drags the robot during the support phase⁴) into the robot of the Jinichi et al. reference. Accordingly, Applicants submit that the Examiner has failed to provide a proper *prima facie* case of obviousness under 35 U.S.C. §103.

In order to establish a *prima facie* case of obviousness, the Examiner must establish that it would have been obvious for one of ordinary skill to have combined the teachings of the cited documents.⁵ One way to establish this would be to show “some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness” and “identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does,”⁶. Furthermore, the Examiner must make “explicit” this rationale of “the apparent reason to combine the known elements in the fashion claimed,” including a detailed explanation of “the effects of

³ See the Adachi et al. reference, page 1796, first full paragraph, left column.

⁴ See the Adachi et al. reference, page 1795, first paragraph, right column.

⁵ See *KSR International, Co. v. Teleflex, Inc.* No. 04-1350 (U.S. Apr. 30, 2007).

⁶ *Id.*

demands known to the design community or present in the marketplace” and “the background knowledge possessed by a person having ordinary skill in the art.”⁷

It is respectfully submitted that the Examiner’s assertion that:

[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Adachi et al. with the robot of Jinichi because, as Adachi et al. suggests, detecting the slope of the floor surface and obstacles such as steps allows the robot to adapt physically to the environment, as Adachi’s does by increasing traction by braking/locking the front wheels to increase stabilization over uneven ground (paragraphs 4.2 and 5). The detection of discontinuous ground allows the robot to effectively negotiate flat terrain quickly, and lock the front wheel to create a stable leg when moving on a steep slope to slow the descent by generating more traction,⁸

is not evidence for obviousness. Applicants disagree with the Examiner’s reasoning, and submit that the mere possibility that one element in one reference could be used in another is not sufficient evidence of a suggestion or motivation to combine the two references.

Applicants submit that the Examiner has used the present application as a blueprint, and selected a local mobility scheme as the main device and then searched other prior art for the missing feature (e.g., detecting slope of the surface) without identifying or discussing any specific evidence of motivation to combine, other than providing conclusionary statements regarding the knowledge of the art, motivation and obviousness. It is respectfully submitted that these statements do not form an “explicit rationale” as required by *KSR International*. Therefore, because the Examiner has not provided an explicit analysis as required by *KSR International*, a *prima facie* case of obviousness has not been established.

Thus, Applicants submit that the Examiner has failed to provide any evidence of motivation for combining the teachings of the Adachi et al. reference with the teachings of the Jinichi et al. reference. Accordingly, the Examiner has not adequately supported the selection and combination of the Jinichi et al. and the Adachi et al. references to render claim 1 obvious. Withdrawal and allowance of claim 1 are respectfully requested.

⁷ Id.

⁸ See Office action, mailed July 16, 2007, page 4, paragraph 2.

Claims 7 and 13 are also allowable for the similarly reasons discussed above, as claims 7 and 13 recite the feature of "sensing a slope of the floor."

Thus, for at least the reasons discussed above, Applicants submit that the combination of the Jinichi et al. and the Adachi et al. references fails to disclose or suggest all the features of claims 1, 13-17, 19-22, 27 and 28. Accordingly, Applicants respectfully request that the rejection be withdrawn.

C. Asserted Obviousness Rejection of Claims 19 and 20

In the outstanding Office action, the Examiner rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over the Jinichi et al. reference in view the Adachi et al. reference and further in view of the Takenaka et al. reference. The rejection is respectfully traversed for at least the following reasons.

As discussed above, Applicants submit that the Junichi et al. and Adachi et al. references fail to disclose or suggest all of the features of claim 13, from which claims 19 and 20 directly depend. Applicants submit that the Takenaka et al. reference fails to overcome the deficiencies of the Junichi et al. and Adachi et al. references, as applied to claim 13. Thus, for at least the reasons discussed above, Applicants submit that the combination of the Junichi et al., the Adachi et al., and the Takenaka et al. references fails to disclose or suggest all of the features of claim 19 and 20. Accordingly, Applicants respectfully request that the rejection be withdrawn.

D. Allowable Subject Matter

Applicants appreciate the Examiner's indication of allowable subject matter in claims 5, 11 and 17. However, it is respectfully submitted that all of the pending claims are in condition for allowance for at least the reasons set forth above.

E. Request for Interview

In the event that a personal interview has not been conducted prior to the Examiner's consideration of this amendment, Applicants respectfully request that the Examiner contact Applicants' undersigned representative and schedule a personal interview.

F. Conclusion

The above remarks demonstrate the failings of the Examiner's arguments with respect to the outstanding rejection, and are sufficient to overcome the rejections. However, these remarks are not intended to, nor need they, comprehensively address each and every reason for the patentability of the claimed subject matter over the applied prior art. Accordingly, Applicants *do not* contend that the claims are patentable solely on the basis of the particular claim elements discussed above.


If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

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PETITION and
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